REVIEWS OF BOOKS

HEREDITY

Darlington, C. D. *The Facts of Life.* London, 1953. Allen & Unwin. Pp. 467. Price 35s.

HEREDITY for Professor C. D. Darlington is the most enduring and fundamental problem of life ; and he has written a stimulating and provocative book, its learning leavened by a lively style, to make available to the reading public the genetic interpretation of man. In his preface he states that while at work it became clear to him that all aspects of our life are bound up with these central notions of reproduction and heredity. The reader may or may not agree.

What is incontestable is that Professor Darlington has provided in the first section of his book a clear and at times amusing history of ideas about heredity from Aristotle to Darwin, its chief protagonists Darwin, Mendel, Pasteur and Galton, the microscope, the cell and the chromosome. Two theories are seen to conflict through the centuries. The first, vitalism, assumes the inheritance of acquired characters and states that the whole character at the time of begetting is represented in the offspring. It has such illustrious sponsors as Aristotle, Lamark and Lysenko, and in this book it is delightfully illustrated by the famous cartoon of Caran d'Ache : " ' Dis-donc, papa, pourquoi que les palmiers sont si grands ? ' ' Cest pour que les giraffes puissent les manger, mon enfant,' " etc. The second is the indirect theory, that something passed down from generation to generation determines the character of the body but is itself influenced by what happens to the body. This latter theory fits like a glove the chromosome theory and the teachings of Mendel.

The book is presumably intended for the general reader and this first section, dealing with the history of ideas and the battle of theories, is well suited to him. Unusual characters are described, the Abbé Spallanzani, for instance, who in the seventeenth century decided to interfere in the "amours," as he put it, of the frog. At mating time he did up his male frogs and toads in silk knickers (*petits caleçons en taffetas ciré*) and but for his blind adherence to ovism he might have drawn useful conclusions from his experiment. There is, too, the horrifying story of Professor Kammerer, who, to prove that acquired characters are inherited, brought with him to meetings in Cambridge and in London a solitary midwife toad, which mates on dry land and which had been induced by Kammerer to mate in water, thereafter developing the pads found in toads of the water mating species. But an American biologist, examining the toad microscopically, not only failed to find any horny growth on the foot but discovered a deposit of indian ink injected under the skin. Kammerer shot himself. Professor Darlington deals at some length with this matter of scientific fraud. His villains are Michurin and Lysenko : his conclusion that " no experiment is of any value unless it is described in such a way that others can repeat it."

It was only when attempts to explain evolution were put aside, and microscopical, chemical and statistical methods were employed, that the great problem of heredity began to yield up its secrets. Mendel was the hero of this search and his greatest and most revolutionary theory that " of the elements which determine." When this point is reached the book becomes difficult for the general reader. It is doubtful whether a condensation of genetical theory and practice could be written more simply, but it must be admitted that this central section of the book is heavy going.

The vitalistic theory explained the likeness between father and child, but how explain the differences, the variation and transformation of species ? Natural selection, says Professor Darlington, provides the motive power of change ; but the units of change, the mutations of the genes that are subject to selection, may or may not be determined.

"We cannot, therefore, exclude the possibility that the residual unexplored uncertainty of mutation arises from an ultimate sub-atomic, physical uncertainty. But any investigator of mutation who made this assumption would, of course, have to resign himself to a life of contemplation rather than experiment." Professor Darlington, one surmises, is no contemplative. He is one for whom "the chase gets hotter and the deterministic assumption becomes more explicit."

The study of one-egg twins is crucial for the author of this book, and from statistics relating to criminal one-egg twins he deduces that most things in most people are genetically determined. This is scientific Calvinism with a vengeance; and it follows that deterrence and reformation are of strictly limited scope and that the delinquent has no choice but to commit crime. It is here that the reader may begin to feel a little dubious, for the author appears to believe that everything about a human being could be predicted if enough were known of his physical structure.

The last section of the book is likely to interest the general reader most, for in it Professor Darlington applies his belief in the paramount importance of heredity to various spheres of life. He envisages the solution of the great problems of development, of disease and, above all, of the origin of life: he touches on the necessity of population control but by a method more drastic than any in use today. "Races, classes and individuals of technically backward types which would not be capable of surviving unassisted are now multiplying out of proportion to those races, classes and individuals to whose initiative and intelligence they owe their multiplication." And so, he claims that the State cannot accept a responsibility, as it does today, which goes back as far as the fertilized egg without one day claiming the right to go further and control the proportions which go to make the fertilized egg.

In this last section of the book the author has a passage of arms with Freud. "If we know how close are the resemblances of one-egg twins in their behaviour, both normal and abnormal, both when separated and when kept together, we do not expect too much from the treatment of psychiatrists," and ". . . the attempt to express mental idiosyncrasies in terms of the accidents of birth and infancy becomes ridiculous in the light of our knowledge of one-egg twins." Like icebergs in mid-ocean the two determinisms collide.

Some readers will find themselves in violent dispute with certain passages in the concluding section of the book. It is not everyone who will agree that "the success of marriage is governed by natural genetic variation," or who will accept the theory of the genetic determination of the mind if the theory is, as the author states, "inconsistent with such illusions as . . . free will."

An all-out attack on free will, and by implication on the numinous, is in fact launched in this last section. "Our means of intuition are, so genetics teaches us, products of natural selection operating to favour . . . the survival of quite ordinary men. An intuition of free will, whether it comes to a scientist, a philosopher or a prophet, is not therefore the kind of witness to which biology will allow us to listen with any degree of faith." Biology, no doubt, will forbid us to listen to any intuition with any degree of faith. But can Professor Darlington tell us why men have intuitions and why natural selection should operate in favour of those who do?

NANCY RAPHAEL.

PSYCHOLOGY

Notcutt, B. *The Psychology of Personality*. London, 1953. Methuen. Pp. 259. Price 21s.

BERNARD NOTCUTT is the professor of psychology in the university of Natal, and his book is an all-embracing talk on personality, so wide in its scope that it runs the danger of superficiality, but escapes it by reason of the writer's obviously real knowledge of so much. After two general chapters, it deals in successive following chapters with traits, types, factors, forces of the environment and